

120-148

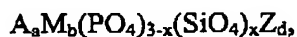
CLAIM AMENDMENTS

This listing of Claims will replace all prior versions, and listings, of Claims in the Application:

Listing of Claims.

1-119 (CANCELLED)

120 (NEW): An electrode active material represented by the general formula:



wherein,

- NASICON; can be entirely phosphate silicate*
- (a) A is selected from the group consisting of Li, Na, K, and mixtures thereof, and $0 < a \leq 8$;
 - (b) M comprises one or more metals, wherein at least one of the one or more metals is capable of undergoing oxidation to a higher valence state, and $1 \leq b \leq 3$;
 - (c) $0 \leq x \leq 3$; and
 - (d) Z is selected from the group consisting of a hydroxyl, a halogen, and mixtures thereof, and $0 < d \leq 6$;

wherein A, M, Z, a, b, x and d are selected so as to maintain electroneutrality of the electrode active material.

121 (NEW): The electrode active material according to Claim 120, wherein A is Li.

122 (NEW): The electrode active material according to Claim 120, wherein $a = 3 + 2x + d$.

123 (NEW): The electrode active material according to Claim 120, wherein a is 0.1 to about 6.

124 (NEW): The electrode active material according to Claim 120, wherein a is from about 2 to about 6.

125 (NEW): The electrode active material according to Claim 120, wherein a is from about 3 to about 6.

126 (NEW): The electrode active material according to Claim 120, wherein M is a transition metal selected from Groups 4 to 11 of the Periodic Table.

127 (NEW): The electrode active material according to Claim 126, wherein M is a +3 oxidation state transition metal selected from Groups 4 to 11 of the Periodic Table, and $a = 3 + 2x + d$.

128 (NEW): The electrode active material according to Claim 126, wherein M is selected from the group consisting of Fe, Co, Ni, Mn, Cu, V, Zr, Ti, Cr, and mixtures thereof.

129 (NEW): The electrode active material according to Claim 126, wherein A is Li.

~~130 (NEW): The electrode active material according to Claim 129, wherein $0 < x < 3$.~~

131 (NEW): The electrode active material according to Claim 130, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

132 (NEW): The electrode active material according to Claim 120, wherein M is M'M'', wherein M' is at least one transition metal selected from Groups 4 to 11 of the Periodic Table; and M'' is at least one element selected from Groups 2, 3, 12, 13, and 14 of the Periodic Table.

133 (NEW): The electrode active material according to Claim 132, wherein M' is selected from the group consisting of Fe, Co, Ni, Mn, Cu, V, Zr, Ti, Cr, and mixtures thereof.

134 (NEW): The electrode active material according to Claim 133, wherein M' is selected from the group consisting of Fe, Co, Mn, Cu, V, Cr, and mixtures thereof.

135 (NEW): The electrode active material according to Claim 133, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Sr, Pb, Cd, Sn, Ba, Be, Al, and mixtures thereof.

136 (NEW): The electrode active material according to Claim 135, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Ba, Al, and mixtures thereof.

137 (NEW): The electrode active material according to Claim 132, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Sr, Pb, Cd, Sn, Ba, Be, Al, and mixtures thereof.

138 (NEW): The electrode active material according to Claim 132, wherein A is Li.

139 (NEW): The electrode active material according to Claim 138, wherein $0 < x < 3$.

140 (NEW): The electrode active material according to Claim 139, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

141 (NEW): The electrode active material according to Claim 120, wherein $0 < x < 3$.

142 (NEW): The electrode active material according to Claim 120, wherein $x = 0$. *total phosphate*

143 (NEW): The electrode active material according to Claim 120, wherein $x = 3$. *total silicate*

144 (NEW): The electrode active material according to Claim 120, wherein Z comprises F.

145 (NEW): The electrode active material according to Claim 120, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

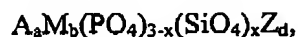
146 (NEW): The electrode active material according to Claim 120, wherein d is from 0.1 to about 6.

147 (NEW): The electrode active material according to Claim 120, wherein d is from about 2 to about 6

148 (NEW): The electrode active material according to Claim 120, wherein d is from about 3 to about 6.

149 (NEW): A battery, comprising:

a first electrode comprising an active material represented by the general formula:



wherein,

- (a) A is selected from the group consisting of Li, Na, K, and mixtures thereof, and $0 < a \leq 8$;
- (b) M comprises one or more metals, wherein at least one of the one or more metals is capable of undergoing oxidation to a higher valence state, and $1 \leq b \leq 3$;
- (c) $0 \leq x \leq 3$; and
- (d) Z is selected from the group consisting of a hydroxyl, a halogen, and mixtures thereof, and $0 < d \leq 6$; wherein A, M, Z, a, b, x and d are selected so as to maintain electroneutrality of the electrode active material;

the battery further comprising a second electrode which is a counter-electrode to the first electrode; and

an electrolyte.

150 (NEW): The battery according to Claim 149, wherein A is Li.

151 (NEW): The battery according to Claim 149, wherein $a = 3 + 2x + d$.

152 (NEW): The battery according to Claim 149, wherein a is 0.1 to about 6.

153 (NEW): The battery according to Claim 149, wherein a is from about 2 to about 6.

154 (NEW): The battery according to Claim 149, wherein a is from about 3 to about 6.

155 (NEW): The battery according to Claim 149, wherein M is a transition metal selected from Groups 4 to 11 of the Periodic Table.

156 (NEW): The battery according to Claim 155, wherein M is a +3 oxidation state transition metal selected from Groups 4 to 11 of the Periodic Table, and $a = 3 + 2x + d$.

157 (NEW): The battery according to Claim 155, wherein M is selected from the group consisting of Fe, Co, Ni, Mn, Cu, V, Zr, Ti, Cr, and mixtures thereof.

158 (NEW): The battery according to Claim 155, wherein A is Li.

159 (NEW): The battery according to Claim 158, wherein $0 < x < 3$.

160 (NEW): The battery according to Claim 159, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

161 (NEW): The battery according to Claim 149, wherein M is $M'M''$, wherein M' is at least one transition metal selected from Groups 4 to 11 of the Periodic Table; and M'' is at least one element selected from Groups 2, 3, 12, 13, and 14 of the Periodic Table.

162 (NEW): The battery according to Claim 161, wherein M' is selected from the group consisting of Fe, Co, Ni, Mn, Cu, V, Zr, Ti, Cr, and mixtures thereof.

163 (NEW): The battery according to Claim 162, wherein M' is selected from the group consisting of Fe, Co, Mn, Cu, V, Cr, and mixtures thereof.

164 (NEW): The battery according to Claim 162, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Sr, Pb, Cd, Sn, Ba, Be, Al, and mixtures thereof.

165 (NEW): The battery according to Claim 164, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Ba, Al, and mixtures thereof.

166 (NEW): The battery according to Claim 161, wherein M'' is selected from the group consisting of Mg, Ca, Zn, Sr, Pb, Cd, Sn, Ba, Be, Al, and mixtures thereof.

167 (NEW): The battery according to Claim 161, wherein A is Li.

168 (NEW): The battery according to Claim 167, wherein $0 < x < 3$.

169 (NEW): The battery according to Claim 168, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

170 (NEW): The battery according to Claim 149, wherein $0 < x < 3$.

171 (NEW): The battery according to Claim 149, wherein $x = 0$.

172 (NEW): The battery according to Claim 149, wherein $x = 3$.

173 (NEW): The battery according to Claim 149, wherein Z comprises F.

174 (NEW): The battery according to Claim 149, wherein Z is selected from the group consisting of OH, F, Cl, Br, and mixtures thereof.

175 (NEW): The battery according to Claim 149, wherein d is from 0.1 to about 6.

176 (NEW): The battery according to Claim 149, wherein d is from about 2 to about 6

177 (NEW): The battery according to Claim 149, wherein d is from about 3 to about 6.

178 (NEW): The battery according to Claim 149, wherein the second electrode comprises a metal oxide, metal chalcogenide, carbon, graphite, and mixtures thereof.

179 (NEW): The battery according to Claim 178, wherein the electrolyte comprises a solvent selected from the group consisting of dimethyl carbonate, diethyl carbonate, dipropylcarbonate, ethyl methyl carbonate, butylene carbonate, γ -butyrolactone, triglyme, tetraglyme, a lactone, an ester, dimethylsulfoxide, dioxolane, sulfolane, and mixtures thereof.

180 (NEW): The battery according to Claim 179, wherein the electrolyte further comprises a lithium salt selected from the group consisting of LiAsF_6 , LiPF_6 , LiClO_4 , $\text{LiB}(\text{C}_6\text{H}_5)_4$, LiAlCl_4 , LiBr , and mixtures thereof.